

# A Low-Cost, Compact, Non-Explosive Pin-Puller for Aerospace Applications

*TiNi Alloy Company*  
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## INNOVATION

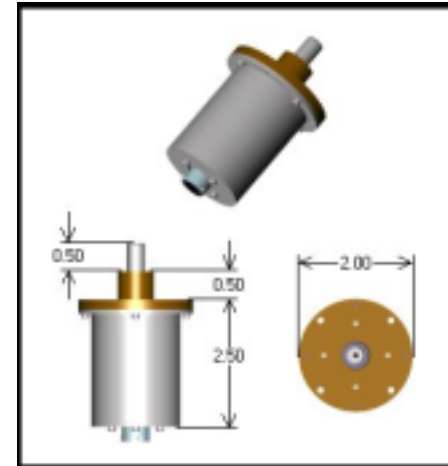
A non-explosive “Pinpuller and Rotary” actuator employing shape memory alloys (SMA)

## ACCOMPLISHMENTS

- ◆ Developed an actuating mechanism by harnessing the recovery characteristics of SMA
- ◆ Developed a SMA trigger mechanism which allows for fast (milli-second) actuation
- ◆ Flight qualified several embodiments prior to the end of Phase II funding
- ◆ Patented trigger mechanism based on SMA technology

## COMMERCIALIZATION

- ◆ An SMA actuator was used to successfully deploy solar arrays for the Clementine Spacecraft
- ◆ This technology expanded company’s aerospace product line sufficiently to enable them to spin off a new company called TiNi Aerospace, Inc.
- ◆ TiNi Aerospace’s production of aerospace release mechanisms grew to several hundred flight articles per year with sales revenue exceeding \$1M per year



*Pinpuller - Model P25-810-1.5R*

## GOVERNMENT/SCIENCE APPLICATIONS

- ◆ Applications include “Hold Down and Release” of numerous satellite deployables including solar panels, communication antennae, instrument cover doors, radiators, heat shields, tether experiments, isolation system and numerous others
- ◆ Used aboard the Mars Global Surveyor, Lunar Prospector and numerous others
- ◆ Planned uses aboard Mars 2001 Mission, ESA’s Rosetta Mission and numerous others